Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

LIBRARY
RECEIVED
★ NOV 1926 ★
U.S. Department of Agriculture

COMBINED MONTHLY REPORT
BRANCH OF RESEARCH

FOREST EXPERIMENT STATIONS

DENDROLOGY

FOREST PRODUCTS

FOREST ECONOMICS

GRAZING RESEARCH

SEP 1926

8—6156

COMBINED MONTHLY REPORT

BRANCH OF RESEARCH

September, 1926

	Page
Foreword	1-3-
Practical demonstration of the importance of seed selection, C. G. Bates.	4
Forest experiment stations:	
Washington	5-7
Northeastern.	8-9
Lake States	10-13
Appalachian	14-16
Southern	17-19
California	20-21
Pacific Northwest	22-23
Northern Rocky Mountain	24-25
Rocky Mountain	26-27
Southwestern	28
Manuscripts	29-30
Forest Products:	
Washington	31
District 1	32-34
District 6	35-37
Forest Economics	38-41
Grazing Research:	
Washington	42
Santa Rita	43
Great Basin	44-46
Jornada	47-48
Research Editor	49

Reports not Received:

Dendrology
Forest Products, D-5
Forest Taxation Inquiry
Grazing Research - District 1
" 3
" 6

COMBINED MONTHLY REPORT
BRANCH OF RESEARCH
September, 1926

FOREWORD

INTRODUCTION TO ORGANIC RESEARCH

E. E. Reid

(Continued from August report)

Temptations. There are many insidious temptations in scientific work. In making a series of observations, particularly before experience has been acquired, there will be some low and some high and perhaps a few that are a good way off. It is frequently hard for the young chemist to see why he cannot leave out the "bad" results and report only the "good" ones. We usually have more or less well defined notions of what the results "ought" to be and naturally trust the observations which fall in line with our ideas. It hurts to report "bad" results. The only square thing to do is to consider all observations impartially and report them frankly. It is allowable to repeat the whole series and to keep on doing this till, by improved technique, concordant results predominate. It is not only allowable but is right to throw out any result, in the obtaining of which we know of an error, but the temptation is to line up the figures and then beat around for excuses for throwing out the "bad" ones, even when we can recall more serious mistakes in the history of some of the "good" ones.

It sometimes happens that subsequent experiments prove that the out-of-line results, which we at first consider errors, are the correct ones after all, in which case we should be quick to give up our pet theories and make new ones to accord with the facts. It is far better for us to be the first to detect flaws in our theories and to abandon or modify them voluntarily than to be driven from our position by the bombardment of an enemy.

Louis Agassiz said "The temptation to impose one's own ideas upon Nature, to explain her mysteries by brilliant theories rather than by patient study of the facts as we find them, still leads us astray."

When we have a theory we are prone to choose experiments which are designed to prove our theory and omit those which might turn out the other way. Rigid honesty demands that we be just as keen to devise experiments which will put our pet theory on the rack. If it is sound it will survive the severest ordeal and come out all the stronger, if it is damaged, well and good.

It is morally and scientifically dangerous to become a partisan of a theory. When a scientist becomes a partisan he is in danger of losing his standing as a scientist. When the judge takes sides in a case he is no longer fit to be judge. The judge must see that every credible witness has a fair show in court. All readers of recent chemical literature can recall certain chemists who having accepted the ion theory, have become ionic champions and have undertaken to prove that all reactions of whatever kind are ionic and others, who, in their opposition to ions, have become as rabid as the anti-vivisectionists. Both sides are wrong in taking sides. It is far better to go out to ascertain the facts without prejudice.

It has happened more than once, and almost any chemist of experience can supply names and dates, that a professor has outlined experiments to a student and has indicated how he expected the results to come out and the student has brought in reports exactly as expected, which were subsequently found to have been obtained by the "paper and pencil method," sometimes even without going through the tedious operations of preparing substances and setting up apparatus. In fortunate cases some slip or some over-exact analysis has aroused suspicion in time and the results have been checked up and the crookedness located before the results were printed, while in other cases a humiliating retraction has to be made of published work. The possibility of such a misfortune is a nightmare to those who direct research.

In rare cases the director of the investigation has been to blame by being so set in his ideas as to refuse to accept any results at variance with them. In some such cases the student, finding that only such and such results will be accepted, has turned in only such and gotten along famously.

It is deep in human nature to want to make the best appearance possible. There is indeed little hope for one who does not wish to appear well before his fellows, but this desire may lead to concealment or pretense. The chemist is tempted to make his preparation of materials appear to be more thorough than it actually was, to mention precautions in the experiments which were not actually taken or which were not always adhered to, or to describe a more perfect form of apparatus than was in reality employed, thus making his work appear better than it actually was. Suppressing results that vary from the mean is another way of doing the same thing. Suppose the following ratios are obtained in titrating an acid against a base: 1.021, 1.022, 1.020, 1.025, 1.021, 1.022, 1.017. Omitting the 4th and last will not change the average but will give the impression of much greater accuracy to the series, as 2 parts in a thousand is considered good in many cases while from 1.017 to 1.025 is 0.008, nearly 1%, and is bad.

Research Ethics. The paramount importance of truth and honesty in obtaining and reporting one's results has been emphasized above, but we are all parts of a complex social system and consideration must be given to squaring our relationships with others, particularly with a brother chemist. To truth in one's self must be added fairness and consideration in dealing with others. The young scientist must start out with the determination to play the game fair, whether he wins or loses.

"Very often ethical conduct is nothing more or less than ordinary good sportsmanship - but at other times complications arise which make it more difficult to follow the ethical path.

"Some of the principles and ideals that should be adhered to by the research chemist in his daily routine may be summarized as follows:

(a) He must strive at all times to seek the truth and his honesty must never be open to question. Attempts to defraud are not part of any research program.

(b) He must give due credit to his co-workers, his colleagues and his friends for courtesies extended to him, and for suggestions that he has received at their hands. He should be punctilious also in giving proper acknowledgment to previous investigators, who have blazed the trail that he is seeking to follow. This is more than courtesy; it is justice.

(c) He must free himself from pettiness. If other chemists have overlooked his work and have given him scant recognition, he should recall that they are human and not infallible, that their acts are probably due to ignorance rather than to malice. As a result of such lack of recognition, he should never permit himself to become embittered or cynical, nor should he leave his own constructive work to plunge into useless and unprofitable wranglings and polemics. He must also be able to take in good part just and constructive criticism, without manifesting hypersensitiveness or bitterness.

(d) He must always stand ready to help other workers in his field. Since the research chemist's true objective is to further not his own progress, but the progress of his science, he should prove a stimulus and an aid to other investigators. Cooperation, suggestions regarding chemical literature, and constructive criticism are all included in such a program. Help should be given unstintingly, frankly, and without reservation. Human relationship is an important factor in modern scientific research. Very few of us today can play the role of a Henry Cavendish, whose chief aim in life (besides his monumental researches) was to avoid the rest of the world. Men who live in such a rarefied intellectual atmosphere that they are kept apart from their fellows are seldom contributing their maximum to scientific progress.

"Many of the principles set forth above are self-evident; none are original and yet some of them are overlooked by many scientists whose output and influence would be remarkably increased, if they recognized them and put them into practice. Fortunately in the truly great man of science, ethical conduct is second nature."

(Concluded)

---#---

PRACTICAL DEMONSTRATION OF THE IMPORTANCE OF SEED SELECTION

C. G. Bates

Earlier mention was made of an effort by Roeser and Bates to solve specific problems of the Nebraska sandhill planting by resort to the methods of seed selection. This is such a clear-cut example of the practical application of the idea of tree breeding, and it is believed that the mere carrying of this idea in the researcher's head will open up so many possibilities, that it is worth while to repeat the facts in this case in slightly different form.

Scattered through many acres of the more recent yellow pine plantations severely damaged by the tip moth, are individuals or small groups of fine, vigorous and clean trees evidently representing a residue from the earliest planting, which was very extensive but not highly successful. The first seed collections for the Nebraska nursery and planting were from near-by sources. The evidence is most convincing that these clean, vigorous trees are from a local seed source; that their greater adaptation to the conditions and consequent vigor has carried them through with relatively little injury by the tip moth. Local seed, perfect adaptation to the site and vigorous growth which will discount the loss of tips, seem, therefore, to be the breeding means by which the seriousness of the pest may be minimized. There is no question of specific immunity, and we are not considering here the direct control of the insect.

Following this earliest planting, for a period of about three years New Mexico seed of yellow pine was the basis. These were not only the darkest years of the project, as regards planting success, but the evidence now indicates that the plantations most mutilated by the tip moth are of this poorly-adapted, slow-growing stock.

In the fight against a Peridermium which has made severe attacks within recent years, much the same method of combat may be used, but here specific immunity was clearly evidenced in a study of the native Nebraska pine. Granting that natural crosses may not produce progeny entirely immune to the disease, it is still worth while to collect seed only from mother trees which show this immunity.

With local seed from especially desirable individual trees as the basis, there will now be started and gradually brought together a collection of future seed bearers which will be segregated from the general plantations, in which desirable crosses will be made naturally, and from which eventually seed may be obtained for extending the general plantations in a much more promising way than is now being done. The only excess cost of this "seed plantation" is that of the unusual care to be taken in collecting seed,- an item which is ordinarily not over 1 to 4% of the cost of nursery stock. This additional investment,- care in seed collecting,- should be profitable wherever planting is being done for commercial returns.

-------#-------

FOREST EXPERIMENT STATIONS

WASHINGTON

General

Clapp and Marsh were still in the field during September, both men expecting to be in Washington early in October. Korstian has been assisting in the general handling of experiment station work. Reineke left toward the latter part of the month to be gone about three weeks on a trip to the Ouachita Forest where he will assist in the mill-scale study. On his way to Washington he plans to visit the Southern and Appalachian Stations.

Use of Publications

Attention is directed to the fact that as far as possible Service publications should be used in connection with miscellaneous correspondence. Particular use should be made of the Yearbook Separate on "Timber: Mine or Crop?" and also of Circular 183 on Forest Experiment Stations. Because the latter presents the general plan of the forest experiment stations, it should be used rather freely. It is not believed that the Stations are using this publication as extensively as they might.

Biological Abstracts

In preparing abstracts for the new publication of "Biological Abstracts," the Editor would greatly appreciate it if the Station men would follow the instructions as given by the Journal for the preparation of material. In many cases the editing involves work because abstracts are not prepared in the prescribed manner.

Mensuration

Toward the end of September it was possible to complete the Accounts work, on which the machines have been used almost continuously since early summer. It is now possible to take up some of the badly delayed research projects and the first study undertaken is the fire study for the Northeastern. In order to get as much work done as possible, we borrowed for short periods the tabulating equipment lying idle in the Bureaus of Roads and Dairying. However, this is not satisfactory, as the machines are not as up-to-date as our own, and are unable to do the work as efficiently. Then, too, we can obtain the machines only for limited periods which makes possible handling only minor jobs.

The Douglas fir regional volume table study was well on its way this month, with practically one-third of the computing force on this investigation. The western yellow pine regional study has reached the stage where considerable analysis is necessary. Considerable time was also devoted in the section to completing the computations to be used in the publication on mensurational technique being prepared by Bruce and Reineke.

Species Names

In most of the recent manuscripts, the authors and stations have not followed check list common names, and have generally not followed a very desirable practice, namely, that upon the first mention of a common name in the manuscript there should also be given the specific name. This is highly desirable because of the rather general looseness in terminology, often with resultant confusion as to just what species are described. In popular articles it is often satisfactory to refer to "yellow pine" or "fir" without giving the accepted species name, but technical papers should be clear and specific. The necessity for this becomes much greater when it is realized that our formal publications now go to about 300 foreign addresses and to those not acquainted with common expressions, "yellow pine" might mean many things. Even among the Washington intellectuals, some confusion was recently caused by the incorrect use of "poplar" in a manuscript.

Where there are too many names to make such a plan feasible it is preferable to list the species names in tabular form, either in a list or at the end of the manuscript. In an appendix, not only could the accepted common name be given but also whatever synonyms the author may have used in the text for that species. Where synonyms are given in any list, the accepted "Check List" name should be definitely indicated.

Personnel

In line with the idea of procuring better trained men for the Stations, there is a possibility that, in addition to forest school undergraduates, the Stations might employ occasionally an undergraduate or graduate student from some other line of biological work. This is desirable from several standpoints; it brings to the Station men with a different point of view than has the forester; it should stimulate greater interest on the part of the regular staff in a new line of thought and so develop that catholic interest that the stations should have in biological sciences; and it offers an opportunity of encouraging men with training in other lines to enter forestry, or to work upon a forest problem in their advanced scholastic work. For examples, students from some such institutions as the University of Chicago or Leland Stanford University, because of their ecological or physiological training, might well be equipped to participate in or contribute to studies of natural reproduction, while in addition they might undertake at a laboratory some phase of the forest problem whose answer would be of value to us in our work.

The employment of one not a forester, however, means one less forester in training, one chance less to interest in research a possible desirable man, one less opportunity to weed out incompetents from the list of research candidates, and, perhaps some criticism from the profession and schools that in THE ONE PLACE where forestry should really be found and paramount, we are providing room for men not foresters. Some of these objections are sound, others not so sound, but they all should be borne in mind.

It is not believed that, for the present at least, there should be more than one such temporary assistant employed at any one station at any one time. In selecting these men greater care must be taken than in selecting foresters, for the quality of training as between the many botanical schools varies perhaps more widely than that at the forest schools, and it is more or less unknown, while the qualifications of the much fewer forest schools are fairly well and generally known.

Finances

Where the Money Goes

Fiscal Year

Projects	1924	1925	1926
Management	$ 54,000	$ 54,347	$ 69,890
Forestation	10,800	15,045	15,450
Types	13,000	5,368	8,364
Measurements	21,000	55,146	38,360
Influences	2,500	2,124	3,285
Protection	32,000	43,985	32,916
Naval stores	- -	- -	12,619
Economics	- -	4,000	4,500
Dendrology	5,600	4,300	4,500
Extension	3,600	4,500	4,500
Special	3,700	13,725	7,636
Total	$146,200	202,540	$202,020

-------#-------

NORTHEASTERN FOREST EXPERIMENT STATION

The summer field meeting of the Northeastern Forest Research Council was held on September 3-4 at the Yale Demonstration and Research Forest near Keene, N. H. In spite of the small attendance of only seven members, the meeting was an unusually lively and interesting one. Under Professor Toumey's leadership, the two days were devoted to an inspection of the various activities under way on the Forest, with a business meeting on the evening of September 3. Discussion at the latter centered largely about ways and means of enabling the Northeastern Forest Experiment Station to function on a more truly regional and adequate basis.

Quite aside from the proposed increase in the Station's own resources, the Council felt that a great deal could be accomplished by closer cooperation between the Station and other forest research agencies, such as forest schools, state forestry departments, and state agricultural experiment stations; and urged the working out of regional and local programs in which each agency would play the part for which it is best fitted. The importance of studies in forest soils was again emphasized, and the director of the Station was asked to arrange during the coming winter for a conference between workers in this field. A similar conference was proposed for those engaged in studies of the white pine weevil.

An important meeting of the New England Council was held at Bretton Woods on September 24-25, at which Colonel Greeley was present and at which Westveld represented the Station. The Council is an organization composed chiefly of prominent business men which has for its object the development of New England. It is sponsor for the economic study of the box industry now being made by the Harvard Forest, and efforts have been made to induce it to get behind a comprehensive forest program for the region. Such a program was presented by Foster of New Hampshire in behalf of the State Foresters. The program advocated:

1. Better protection against forest fires, insects, and disease.

2. Increased public ownership of forests, including town forests.

3. An adjustment of forest taxes so as to encourage and not discourage private forest practice.

4. Adequate state nurseries for production of trees at low cost.

5. Support of forest investigations through the Federal Forest Experiment Station at Amherst and its cooperators.

6. Better methods of marketing forest products and fostering the idea of marketing associations among woodlot owners.

A resolution was adopted by the Council urging each of its state delegations to cooperate with forestry interests and wood-working industries in the preparation of a forestry program in accordance with the recommendations contained in the report of the state foresters.

On September 27 Dana attended a meeting in Washington of the delegates to the Eighth General Assembly of the International Institute of Agriculture and of others interested in the Institute. During the past year the latter has been placed virtually under Italian domination, and the main object of the meeting was to make recommendations as to the attitude which the American Government should adopt toward the Institute. After practically an all day session it was agreed that, pending action by the Institute in putting into effect the principles proposed by the American delegation and adopted by the General Assembly, a friendly, passive attitude should be maintained. If this does not prove effective, financial pressure should be exerted on the Institute by withholding the present extraordinary contributions to its support. These recommendations were presented to the Secretary of Agriculture, who intimated that they met with his approval and that he would take them up with the Department of State.

Spaulding spent most of the month in examining softwood slash at Alfred, Maine, and mixed softwood and hardwood slash at Sugar Island, Maine, and in locating and laying out additional permanent slash plots at Cherry Mountain with Westveld. Three new plots of 3.6 acres each will be cut as follows: Unlopped slash of all species; lopped slash of all species; and unlopped hardwood slash with the softwood slash burned. The species represented on the area are spruce, fir, yellow birch, hard maple, and beech. The percentage of hard maple is considerably greater than was the case in two similar plots laid out last year.

During the early part of the month Westveld and Gast made some soil studies on the Cherry Mountain plots in cooperation with Doctor M. F. Morgan of the Connecticut Agricultural Experiment Station and Doctor G. W. Conrey of the Ohio Agricultural Experiment Station. Some very interesting soil conditions were found, and five distinct types of soil were identified on the area.

------#------

LAKE STATES FOREST EXPERIMENT STATION

Early in the month the station was visited by the Forester, District Forester Peck, and a number of other forest officers in connection with the Superior Forest road controversy. Following the hearing, the Forester and his party, together with the Director, left St. Paul for Upper Michigan to attend the annual meeting of the Station Advisory Committee at Grand Island, September 8, and the formal opening of the new Upper Peninsula branch field station.

The big event of the month was the formal opening of the Upper Peninsula substation at Ruse, Michigan, which literally went over with a "bang" when the Forester blew 400 feet of swamp forest sky high.

In Marquette, on the night of September 7, there assembled a group of "dignitaries" from the Lake States and more distant points in the U.S. to dedicate the new substation. Among those present were Congressman R.O. Woodruff, co-author of the McNary-Woodruff forest acquisition bill; Dean Effinger of Michigan; Dean Coffey of Minnesota; Dean Russell of Wisconsin; John M. Bush, land agent of the Cleveland Cliffs Iron Company; George Bishop, Secretary of the Upper Peninsula Development Bureau; Marcus Schaaf, State Forester of Michigan; C. L. Harrington, Superintendent of Forests and Parks in Wisconsin; P. S. Lovejoy of the Michigan Conservation Department; Charles Peterson, Michigan State Forest Firewarden. The forest schools were represented by Professor Schmitz of Minnesota, Professor Jotter of Michigan, and Professor Chittenden of Michigan State College. H. Lunden and F. Marston represented the Michigan Conservation Commission, and H.J. Cox the U. S. Weather Bureau at Chicago. L. Livingston and T. Amundson of the Michigan State College Agricultural Extension Service engineered the blasting of the 400 feet of ditch. Others included E. G. Amos of the same department; G. Putnam, director of the Upper Peninsula Agricultural Experiment Station, and Col. Greeley, Col. Peck, C. P. Winslow, R. G. Schreck, C. A. Hoar, and R. Zon.

On the morning of September 8, this group of notables gathered, as druids of old, beneath the virgin forest, where amidst a deluge of rain, took place the formal opening of the substation. George Bishop gave an address of welcome followed by the presentation of the deed to Colonel Greeley by John M. Bush of the Cleveland Cliffs Iron Company. The Forester than blazed the trail for the new station by marking the first tree on a sample area representing a partial cutting in northern hardwoods. Following this, Mr. Zon with the aid of charts showing the relative cost of sawing large and small timber, talked on this phase of "selective" logging while lumbermen crowded about, eager to listen. The party then moved to the site of the substation building for a tour of inspection and later gathered along the highway to witness the blowing of the last 400 feet of ditch which was to give a new lease of life to a stagnated swamp forest.

Everything was in readiness and everybody on their toes with the Forester at the helm ready for action. When silence reigned, "Larry" Livingston gave the command to fire, and the Forester with a determined effort sent home the plunger, and what happened - nothing - the forest remained as peaceful as before. After a little scurrying around, the trouble was located and 400 feet of swamp was showered on the surrounding landscape.

After this event the party was entertained by the Cleveland Cliffs Iron Company. At their camps near Forest Lake a regular logging camp dinner was enjoyed by all. The party then motored to Munising and enjoyed an interesting trip through the Munising Paper Mill which was followed by a boat ride to the Pictured Rocks and Grand Island. In the evening after a banquet at Hotel Williams on Grand Island, a meeting of the Advisory Committee was held and forestry problems discussed.

The keen interest in the dedication shown by lumbermen and others clearly indicates that the days of creating a market for forestry are drawing to a close and we are approaching the dawn of a new era in which forestry sells itself for what it is worth.

Following the meeting of the Advisory Committee, Zon accompanied the Forester's party of 100 ~~xxxxx~~ notables on a tour of the Tawas Division of the Michigan National Forest, the state forests near Rose City and Higgins Lake and back to Alpena, returning to St. Paul, September 13.

The field work on the oak study in Michigan was brought to a close. A total of 77 temporary plots and 142 stem analyses were obtained during the season. Most of the important areas of oak in the northern part of the state were visited. Without exception the oak type was found on the dry sandy soils excepting only the sandy outwash plains of the jack pine type where it may be that the oak is absent owing to frost or some combination of climatic factors rather than to the soil conditions. On the moister sandy soils and on the heavier soils, the oaks are replaced by the aspen or hardwood-hemlock types, although occasionally areas of red oak are found on hills or ridges with sandy loam soils. Kittredge visited the State College at East Lansing where arrangements were made with Professor Chittenden by which the College will employ the same two student assistants on a part time basis during the fall to make the preliminary computations and compilations of the field data.

During the month, Brown and Verrall, a student assistant from the University of Minnesota, completed the field work of estimating and mapping the substation tract of timber located at Ruse, Michigan.

The area was logged over in the early days for white pine and in 1912 was gone over again and logged for elm and basswood. The present types include the swamp type consisting of black spruce, balsam, and white cedar, a transition type of mixed hardwoods and conifers chiefly yellow birch, hard maple, black ash and white cedar, balsam, and white spruce, and the climax forest on the drier situations made up chiefly of hard maple.

There is an excellent network of old logging roads on the area which will serve both for logging and fire protection. Marquette and Munising within 20 miles of the area are good markets for forest products and Michigan State highway 25, on which the tract is located, and the Munising, Marquette and Southeastern Railway which crosses the area solve the transportation problem. This tract will prove not only an excellent field laboratory for conducting research in forestry, but will also serve as a demonstration area.

Wackerman spent the month at the substation at Ruse, Michigan, supervising the construction of the office building, the placing of signs along the highway, and other necessary improvements. Part of the time was spent on the swamp drainage project which was started at the substation this year. An area of true swamps was surveyed, water level wells established, the preliminary ditching completed and the boundary of a ten-acre sample plot surveyed. A weather station was established in the swamp forest and readings three times daily in the open and in a typical hardwood stand were continued and begin to show some interesting differences. During the month arrangements were also made with local settlers to log twenty acres of hardwoods to be marked for a partial cutting.

On September 24, Zon left again for Upper Michigan to supervise the marking of this area.

CLOQUET FOREST EXPERIMENT STATION

The months of August and September were rather quiet at the Station. No new work was started.

Hansen built a forestry float for the American Legion parade at Mankato. This was financed in part by the local post and the Arrowhead Association.

Hanson spoke before the Cloquet Lions' Club and gave instructions in forestry at the Boy Scout Camp at Eagle Lake.

A group of customers of the Northwestern Paper Company inspected the Station and were given a picnic dinner by the lumber companies as well as a group of Rock Island Railroad officials.

Field work for the Management Plan was completed.

Gevorkiantz and his crew completed their field work on the aspen-birch study. A total of 108 plots, 34 of which were yield plots and the other 74 conversion plots, were secured. In addition, volume and rot data were taken on 88 aspen and volume data on 44 paper birch trees. One hundred six trees were measured both by calipers and tape to determine the difference that occurs between diameter measurements by these two methods.

The early fall has been exceedingly moist and gives promise of a very light fire season. During the period of January 1 to July 31 we received 10.52 inches precipitation; from August 1 to September 28 we received 12.22 inches precipitation. This has caused a considerable increase in the water in the lakes, swamps, and streams. Heavy frost with temperatures of 24 degrees are experienced nightly.

A small woodlot was shown as the Station's part in the University substation exhibit at the State Fair. Material was furnished to the companies who put on a forestry exhibit at the Lake County Fair and the Carlton County Fair.

Readings for the U. S. Weather Bureau forest fire study have been begun at the Station.

-------#-------

APPALACHIAN FOREST EXPERIMENT STATION

General

The summer field season ended with the breaking up of the field parties under E. F. McCarthy, F. A. Haasis, and L. J. Young. Junior foresters Hough and Kellogg left on educational furlough for graduate work at Yale Forest School.

F. W. Haasis left Asheville September 26 to begin an educational furlough at John Hopkins University. He plans to major in plant physiology under Dr. B. E. Livingston, with additional work in either physics or chemistry.

Dr. Charles R. Hursh joined the staff on the 18th, as associate forest ecologist. Dr. Hursh has had considerable experience in studies of plant pathology, physiology, and ecology in eastern and western America and in Europe. He comes to the Station from the Boyce Thompson Institute for Plant Research, Yonkers, N. Y.

Oak Growth and Yield Study (TS-12)

The field party under the direction of McCarthy was fortunate in finding several cutting operations in second-growth oak near Wardensville, West Va., which made possible the collection of about 450 tree measurements for construction of volume tables. These sawmill operations were found in stands which were measured last year for yield, so the data will be serviceable for computing the yields of these plots.

Cutting in these second-growth oak stands usually leaves enough small trees to fill the holes quickly, and as the larger trees are generally black or scarlet oaks, the composition of the forest is improved by the cutting. Sawing of second-growth oak in portable mills results in excessive slab waste and often in imperfect lumber. At one place a stand of white oak about 155 years old which ranged in height from 90 to 105 feet was largely marketed as piling. Improvement in utilization methods will greatly increase the interest in growing hardwoods by increasing the value of the yield.

Nineteen yield plots were measured during the month, bringing the total number now available well over 400. Eleven localities where charcoal had been burned for iron production have been visited in the vicinity of the Shenandoah Forest. This work completes the field study of volume and yield study of oaks unless computation of these data shows need for further work.

Dr. G. W. Hedgcock worked with the party in West Virginia for about a week, getting records of the extent and character of decay in oaks. Dr. Carl Hartley spent two days getting acquainted with the field conditions which affect studies of decay in second-growth stands. It was found that the trees which are most liable to develop heart rot are those which have been burned the second time on the old scars. Where second-growth stands of oak have been protected from fire the trees are commonly sound at the base and even when slight scarring has occurred, healing has been rapid with little decay, except in the sapwood.

McCarthy accompanied Supervisor Marsh over the North River and Deerfield districts of the Shenandoah to assist in establishing administrative research projects and to find areas suitable for fire damage study. The party was later moved to Deerfield, Va., where work was done on the fire damage project; four yield plots were measured in a pure stand of white pine and one quarter acre plot was established in cooperation with Ranger Quick to release white pine advance growth from interference by a poor growth of oaks. Future records on this plot will be taken by Quick.

General Study of Plantations (Fp-2)

Early in September Haasis joined State Forester F. B. Merrill of Kentucky for a ten days' study of forest plantations in various parts of the state. Good plantations were found of yellow poplar, catalpa, and black walnut near Pineville, Richmond, and Earlington, the ages being about 15-20 years. The black locust has generally been strikingly unsuccessful. As is so often the case, some of the plantations have changed hands since they were set out and the new owners are not so enthusiastic about them as the former owners were. However, it is gratifying to find that some of the stands are at least being protected from fire, grazing, and other trespass.

Returning to Louisville, Merrill and Haasis made a brief visit to the Indiana State Forest, a short distance from the Ohio River. A good deal of experimental planting has been done here, beginning in 1903 or 1904. Most of this work with both hardwoods aand conifers has been unsuccessful. The best looking part of this 4,500-acre forest is the young second growth.

The Kentuckey Forest Service has a forest nursery, chiefly hardwoods, near the race track on the State Fair Grounds at Louisville. Mr. Merrill has several interesting problems here in connection with raising stock. One of the chief troubles is keeping the plants back to a convenient size for handling. One-year-old seedlings of black locust and catalpa are almost too large, while the red oaks and yellow poplars could not be much larger to advantage. Perhaps sowing the seed later in the season will give more satisfactory planting stock, if the seedlings harden early enough in the fall; or it may be necessary to cut the plants back before shipping.

At Franklin large, well-grown, planted white pine trees were seen, considerably beyond the natural range of the species.

Forest Insect Investigations

Routine matters, chiefly climatic records, and life history studies on the southern pine beetle, occupied the most of Beal's time. R.A. St. George spent the month in Washington on some experiments at the Eastern field station.

During the month we have been fortunate enough to have visits from several noted foreign entomologists. Dr. Proll, German entomologist, spent a week at Bent Creek early in September. Dr. Soudek, entomologist from the College of Agriculture and Forestry, Brno, Czechoslovakia, spent one day visiting our experimental plots.

Dr. Craighead was at the Bent Creek laboratory a few days going over the work with Beal. Dr. Caroline Rumbold and Dr. Carl Hartley, of the Office of Forest Pathology, visited the laboratory to discuss the proposed studies of the relation supposed to exist between the southern pine beetle and infection by blue stain.

Damage to Timber from the 1925 Drought

The permanent sample plots established at Bent Creek for observation of the results of last summer's drought were visited by Haasis, Hursh, and Frothingham. Last spring's inspection showed partial recovery of some trees, but in most cases the recovery has been restricted to individual branches and the development of side sprouts. Apparently the loss through permanent crippling has been severe. Excessive drought damage seems to have been confined to the thin soils.

Asheville Weather Bureau records show that last year there was a deficit of about 18 inches below the normal of about 40 inches. This deficit occurred mostly in the summer. A deficit of over 9 inches has accumulated during the present year. This occurred mostly in the earlier part of the year; the summer months had only a little less than their normal rainfall. It is noteworthy that Carolina hemlock in the Biltmore Estate, which has not recently borne cones abundantly, this year had a tremendous crop, the foliage being largely concealed under the brown open cones. This may possibly be attributed to last season's drought.

---#---

SOUTHERN FOREST EXPERIMENT STATION

General

Assistant Silviculturist Wahlenburg of the Northern Rocky Mountain States was offered a transfer to the South to fill the position left vacant by Mr. Hadley's resignation earlier in the summer. Mr. Wahlenburg accepted the offer and will report at New Orleans as soon as he can complete current work at Savenac. H. E. Ochsner, a graduate of the Michigan Forest School, reported for duty as student assistant at Starke the first of the month.

Miss Spuhler spent ten days in Washington in connection with her vacation. Some of this time she spent in getting acquainted with the Washington routine, in the course of which she picked up information which will help us in future work.

Forbes reported in Washington on the 8th, following his leave. He spent about two days of the following week picking up loose ends of the pine growth study, and the remainder of his time in miscellaneous activities.

Demmon compiled a very valuable report on the present status of all of our projects at the Urania Branch Station, which he had visited the previous month. This is intrinsically valuable, and will be the basis for a written guide to the Urania work, whenever we can get around to writing it.

Consultation with Chairman Hardtner and other members of the Advisory Council resulted in our setting the next council meeting for October 26-27 at Bogalusa.

The station had the great pleasure of a three-day visit from Dr. Tor Jonson and Mr. F. Johannson of Sweden. Practically the entire time was spent at the Bogalusa Branch, where we showed our visitors our own work in Forestation, Fire, and Management, and the commercial plantations of the Great Southern Lumber Company. They were much impressed not only with the rapidity of growth of loblolly and slash pine, but also with the very complete denudation of the pine lands in Mississippi by steam skidders. Among the interesting things which we learned from Dr. Jonson is that the Swedes favor clear cutting of pine on unfavorable sites, following the establishment of advance reproduction; that they do not believe height growth to be stimulated by crowding, although trees may be short as a result of exposure in very open stands, or as a result of excessive competition in very dense stands; that the Danes have made some intensive studies of diameter distribution in even-aged stands, and have found that site enters as a factor, although its effect cannot be detected except where data are abundant; and that Jonson personally believes that the foresters of the world need not worry greatly about the production of large-sized trees, because of the increasing use which will be made of pulp products for many purposes for which solid wood only is now used.

Drs. Hartley and Rumbold continued their study of blue stain at Starke, where they found very conflicting evidence on the possibility that these fungi are capable of killing a tree by interfering with conduction within it. Mr. Bruce also spent a day at Starke, and was able to help Wyman substantially on his statistical analyses. State Forester Hogue of Mississippi visited Bogalusa, being particularly interested in our forestation work.

Management

Before leaving for Hot Springs, Arkansas, to join the cooperative study of small sawmills, Barrett spent several days working up figures from our Urania thinnings. Mr. Hine, whose resignation a year ago has delayed us in the compilation of this material, worked with Mr. Barrett.

Barrett reports that the mill study goes slowly, owing to the disinclination of Arkansas sawmills and sawmill men to work more than a few days at a stretch. We also learn through the "grapevine" that he finds the Arkansas topography confusing to his sense of direction!

Logging on the ten-acre method-of-cutting plot at Talisheek proceeds very slowly and we are a little apprehensive of the same long drawn out process which handicapped us on the two hundred acres near Bogalusa three years ago.

Demmon, who had been kept pretty busy by the routine office work during the first half of the month, returned to his extensive survey reports and practically completed one of the most comprehensive, that on the longleaf pine lands of the Industrial Lumber Company of southwest Louisiana.

Naval Stores

The routine of chipping and dipping at Starke was broken only by a recurrence of the high water in Sampson Lake, which drowned out some of our virgin cups.

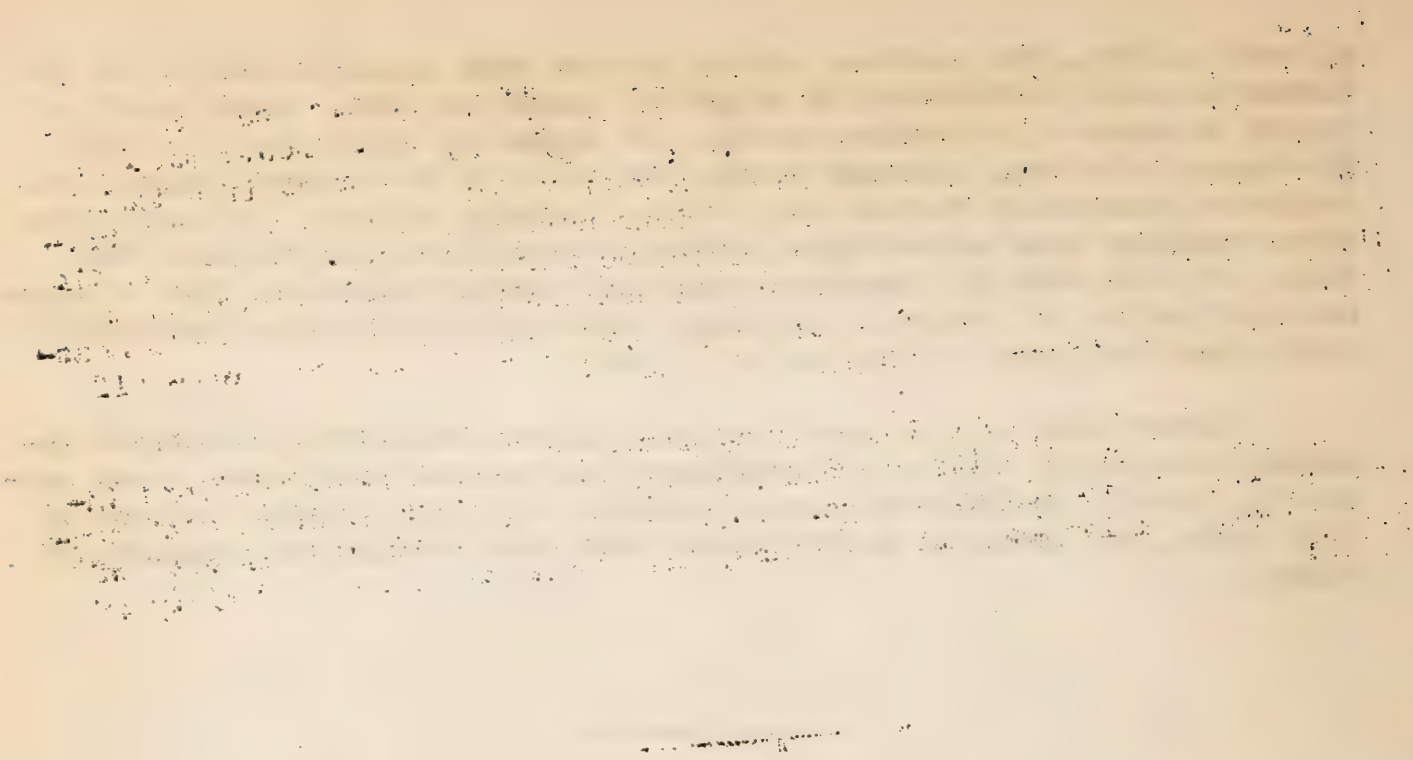
Forestation

The experimental nursery beds at Bogalusa were a most gratifying sight to show our foreign visitors, and promised to give us more reliable information than we have ever had. Wakeley has spent considerable time on an inquiry into the possibility of relying upon top measurements of seedlings instead of the time-consuming root measurements. At Bruce's suggestion he is attempting to establish linear correlation between the top and root measurements of several hundred seedlings laboriously dug up last year, and hopes thereby to save considerable toil this fall in the nursery. Since the great majority of our seedlings are amply large for planting purposes and in fact are more often too large than too small, both

of root and top, the question arises whether much significance can be attached to small differences in height or length of root. Roots must be pruned to about eight inches anyway. It begins to appear as if a tally by classes of stock, although crude, may prove to be the most useful criterion of success or failure from various nursery methods. If any of the other stations have solved this problem we should be glad to hear from them. If they have an answer we shall ask another question: How to measure top lengths of longleaf seedlings, whose buds are scarcely one-half inch above the ground at the end of a year!

Hayes' data on the Great Southern Lumber Company's plantations includes some thirty samples of seedlings from various conditions, each comprising from 50 to 750 seedlings. Loblolly and slash planted in each of four years, and longleaf in two years, have been studied on a variety of sites.

-------#-------



CALIFORNIA FOREST EXPERIMENT STATION

At the end of the month word was received that the Secretary had approved Berkeley as the headquarters for the Station, where it will be located in cooperation with the University of California. Details as to space will be worked out later. During the past month the staff has been temporarily housed in the old Research section of the District Office in the Ferry Building at San Francisco.

Natural Reproduction Study

A preliminary extensive seed crop survey was undertaken by all members of the staff while traveling on other work. In the spring the indications were that yellow and Jeffrey pine would have a heavy seed crop, but as the season progressed the probable work of twig borers and weevils arrested the growth of the cones and made the seed worthless. Thus there are to be found large quantities of immature cones persisting on the trees, and strangely the squirrels pass by such cones.

An interesting Jeffrey pine was found on the Lassen, literally studded with cones from eight successive years, the seed apparently being annually dispersed.

Methods of Cutting

Dunning, Wieslander and Siggins spent part of August and September in running check marking cruises through the Lassen Lumber & Box Company areas, the Fruit Growers' areas and areas on the Plumas and Stanislaus.

Yield

Wieslander and Siggins spent the greater part of September in finding additional plots for the mixed yield study in order to fill gaps in our present data.

Fire Studies

The Weather Bureau assigned Gray to the study of fire weather forecasting in the California district. Gray is a recent graduate of Stanford. As a preliminary step he covered the entire California region, visiting the Forest Service and cooperative observing stations, studying the methods used and the accuracy of the data secured. Observers were instructed in the use of instruments and stations were checked for desirability of location. Following this general survey a more detailed plan of the study will be undertaken this winter. It has already been clearly indicated that our observers will have to be far more careful in their work if the data is to be of any scientific value. Gray will work in close cooperation with the staff and the District Office of Operation. He has had an opportunity to study the effect of local winds in fire control on some going fires.

Kotok will participate in a fire line construction project which contemplates the use of tractors and graders in the building of prepared fire lines. This will form the first of a series of experiments with tractors.

Training School

Dunning and Kotok prepared an outline of subjects to be handled at the District Training School at Feather River. Dunning will handle research as it applies to forest management and Kotok will give a course in fire control and fire studies in cooperation with the District Forester.

Blister Rust Control

Preliminary arrangements have been made with Wyckoff for the study of Ribes succession on some of the permanent sample plots to be established in the Cow Creek area on the Stanislaus Forest. It will follow closely our reproduction plot methods. These plots will be followed for a number of years to determine the rate of spread of Ribes, when competing vegetation is removed and the forest is opened by logging.

Kotok is a member of a committee appointed to advise the State Board of Forestry on a State Forestry Budget. In the recent primaries the successful Republican candidate for governor made conservation an important plank in his platform. Forestry interests in the state are looking on this as an opportune time to press for a comprehensive revision of forestry legislation and a suitable increase in the state appropriation for forestry work.

---#---

PACIFIC NORTHWEST FOREST EXPERIMENT STATION

The most interesting topic in forestry and lumbering circles this month is the announcement of the efforts to merge into one great corporation a large number of the Douglas fir lumber companies. Such a merger has been talked of before but it is nearer realization now than ever. It is the hope to include some 70 or 80 mills, with about 70 billion feet of timber. This is said to necessitate a capital of $360,000,000. Such a combination would cheapen production and merchandizing, stabilize the industry, and would certainly make continuous production an object, which it is not now for the ordinary mill, and thereby give great stimulation to the practice of forestry on private lands.

The visit of Dr. L. F. Hawley of the Madison Laboratory has resulted in many hours of stimulating discussion about fire studies. He and Osborne joined Munger and McArdle at Wind River, where there was a background of burned acres and snags for their conferences. His slant on the subject of fire studies shows how a working knowledge of physics and chemistry is essential for an insight into the behavior of fire. Foresters need the help of such men as Hawley on studies which are out of the line of forestry.

The forester for the city of Seattle, Mr. Allen Thompson, had a problem in connection with preparing a working plan for the Cedar River watershed which we were able to help in both in a conference and by correspondence. Particularly he wished to know how the new yield tables which are based on the age-height site class could be used on clean-cut stump land, where the sites were classified according to radial growth during the first century.

On his return from his vacation, Isaac visited the 4-foot-square seed catchers at Wilark and was jubilant to find one Douglas fir seed in the catcher 2,000 feet out from the seed trees. There was a good distribution in all catchers up to 900 feet.

Simson was on leave most of the month and during his absence McArdle was at Wind River and with Field Assistant Sanders handled the current work there. It was a wet month, so there was nothing doing with active fires. Some piled brush was burned very successfully in the arboretum clearing after a week of rain, following a night when it poured 1.6 inches. Railroad fusees were used to ignite some of the piles as an experiment.

Meyer continued to study the application of normal Douglas fir yield tables to average stands, by looking into and taking further measurements in stands of several ages and sites in various parts of Oregon. Only those stands are being considered for the present in which sample plots were previously taken. An analysis of the collected data during the winter is expected to reveal the strengths and weaknesses of the method being now used.

The sample plot program of the Station was resumed this fall with the remeasurement of four plots on the best site quality land. Munger and Meyer joined forces for this part of the work and the latter laid out three more plots in the same general neighborhood, intending to show different conditions. As there is now an accumulation of fifteen years measurements on the first four plots, interesting results are to be expected and comparisons with yield table values will prove valuable. In addition a start was made on plotting the trees of a sample plot on graph paper with the intent to develop methods for probable future work on the analysis of normality of a stand based upon the single tree as suggested by D. Bruce in a mimeograph of last year treating statistically with the deviations of sample plot data in southern yellow pine from the "normal" values.

The Portland Chamber of Commerce has just appointed a Forestry Committee of sixteen, mostly lumbermen, upon which the Director represents the Forest Service.

-------#-------

NORTHERN ROCKY MOUNTAIN FOREST EXPERIMENT STATION

After being delayed most of the summer by fire fighting and other causes, the white pine methods-of-cutting study was finally gotten under way at the Priest River Experimental Center during the first week of September. This deals with the establishment of permanent sample plots in different cutting methods and is Weidman's individual project. He was able to put in three weeks on it this month, with the aid of three field assistants all the time and Kempff and Marshall part of the time. Two plots were completely established and a third started. The latter is an 8-acre plot representing excellently the standard marking practice with thrifty and uniformly distributed seed trees of white pine and a light residual stand of cedar, white fir and hemlock. The former plots represent the method now in vogue on the Kaniksu Forest of treating overmature and defective white pine-hemlock-cedar stands which are close to the climax stage. These contain few white pines and a heavy stand of the tolerants. There is no stumpage value for the latter; they are felled together with enough of the pine to carry the costs and the mass of slash piled and burned. Three to five white pine seed trees are left per acre if possible. The object is to open up the stand so heavily that white pine reproduction can be secured. The cost of the hemlock disposal operation amounts to about $35 per acre. The purpose of the two plots established in this cutting was in one case to determine whether and how white pine reproduction is secured, and in the other case (where there was a considerable second story stand of somewhat younger hemlock, cedar and white fir*) to ascertain primarily whether a second cut can be secured from the residual stand and secondarily whether white pine or other reproduction can be secured under it. For following the reproduction, mil acre quadrats are being used in all the plots to the number of 12 per acre.

The month marked the return of Marshall after 4½ months' leave and the departure of Kempff to spend 9 months in advance study under Professor Fisher at Harvard Forest.

Haig, with two field assistants, spent practically all of September in the Steamboat Creek drainage on the Coeur d'Alene Forest, where he found an excellent distribution of age classes for the temporary plots of the white pine yield study. Rain off and on and wet brush for about 12 days slowed up the work considerably, but with the use of celluloid sheets to take field data, fair progress was made. Plots to the extent of 28 in the 110-120-year age class and 2 in the 60-80-year class were secured. In addition, seedling height data were taken, and a permanent Mc plot established years ago by Brewster was looked up and examined with a view of re-establishing it.

The heavy rains of late August and early September ended the possibilities of studying active forest fires in this region and Gisborne returned to Missoula the middle of September. Brief summaries of the weather of the past season have been prepared for use by the District Forester in rating the efficiency of fire control, and for publication in the Service Bulletin.

Doctor Hawley, of the Madison Laboratory, was a most welcome visitor during the month. Although we were not able to show the expert on the fundamentals of combustion a fuel type which illustrates high danger in this region, we did show him a cold fire which illustrated how little fuel is required to carry fire and kill timber.

At Savenac Nursery Wahlenberg confined his work largely to laboratory examinations of the planting stock used in fertilizer tests and the brush competition study. Several inches of snow on September 23 promised to interfere with the planting of 4,000 trees in the hardening-off and root-control projects, but later weather has been more favorable. Mr. R. H. Johnson, planting assistant on the Michigan National Forest, spent one day with Wahlenberg discussing mutual problems.

September Activities

The administrative affairs of the Station have occupied almost the entire time of Bates during September, so that there has been little productive effort beyond a few sand examinations in connection with T-5. This project, as outlined during the past two months, has been definitely postponed pending the outcome of further necessary investigation of inactive sand bases for carrying the nutrient solutions. A conference with Prof. Rogers of Colorado Agricultural College on September 24 settled the nature of these probings, which will include some tests of aqueous solutions. The possibility of keeping coniferous trees healthy in such solutions, except by very elaborate means of aeration, has been considered very remote.

Mr. Clapp's visit from the 4th to the 7th covered a great many questions relative to the future work of the Station, including the closing of the Wagon Wheel Gap branch. On the 9th, Bates paid a final visit to Wagon Wheel Gap, where, with Mr. Kadel of the Weather Bureau, plans were made for disposition of the property of both Bureaus. All equipment suitable for use at other stations was promptly listed to the Directors, and the requisitions received covered all of the more usual items three or four times.

It appears that at the end of the month the affairs of the Station are pretty well cleaned up and the men should be ready to leave early in October. Junior Forester Anderson remains on the Rio Grande as Deputy Supervisor.

Another source of difficulty has been the resignation of Ranger Robertson, who has faithfully looked after the maintenance of the Fremont field station during most of ten years, and has adapted himself to take the weather observations, look after growing things in the greenhouse, and assume other similar responsibilities, very effectively. Because of the great range of his duties, especially in the winter when alone, his place is extremely hard to fill, and though 50 men applied for the job at $90 per month, a suitable man to take his place has not yet been found.

Roeser has been very fully occupied during the month with a final heat test on seedlings, (T-2) with marking and thinning operations as a part of M-1, and with the beginning of plantation counts and measurements, not to mention some slight attention to nearly every project on the calendar.

October Plans

It is hoped to have a new maintenance man at the Fremont plant early in October, and both Roeser and Bates will spend a good deal of time during the month introducing him to his varied duties.

The principal project activity will be the initiation of the growth tests in T-5, mentioned above, by which it is hoped to determine which of several sands, if any, can be used to carry nutrient solutions without appreciably affecting their purity.

SOUTHWESTERN FOREST EXPERIMENT STATION

The big event in the closing week of the Ranger Training Camp (next to the farewell dance) was Thinning Day. The entire camp of 40 men devoted a day to the establishment of five thinning plots. Each squad of eight men handled one plot, going through every step including the establishment of boundaries, marking and removing trees, tagging, measuring and recording trees, and the disposal of slash. All material removed down to the one-inch class, was measured in order to obtain a record of the total volume and to supply data for a cubic foot volume table. The idea originated with District Forester Pooler some two years ago when he requested Forest Management and Research to formulate a plan outlining experimental work for rangers in order to stimulate their interest in timber growing. Thinnings, which in District 3 resolve themselves largely into improvement cuttings, bring into play the individual's knowledge of the growth of trees and the development of stands more perhaps than any other activity. Planting would do the same thing but it has the disadvantage that one must wait a generation for results. If one may judge by the interest and enthusiasm exhibited by every man in the five squads, the idea went over big and we may look for the establishment of many thinning or management plots in District 3 in the near future.

Messrs. Clapp, Marsh and Chapline spent some two weeks in the District. After a short stay at Fort Valley they, accompanied by Pooler, Cooperrider and Pearson, drove through the big yellow pine belt on the south end of the Coconino to the Roosevelt watershed on the Tonto. Here a study was made of the erosion problem and the progress of revegetation experiments carried on by Cooperrider. Fenced plots show very plainly that erosion can be greatly reduced by proper regulation of grazing. On the Santa Rita Range Reserve the benefits resulting from proper regulation of grazing stand out in striking contrast to the overgrazed Roosevelt watershed. The growth of grass on these "desert" ranges under protection is almost beyond belief. According to Culley, the growth this year on the Santa Rita is rather below normal because of deficient summer rains, and yet the grama grass was almost knee high in many places. Evidence here and elsewhere in the country below 6,000 feet indicates that these ranges under reasonable management are capable of producing more and better forage acre for acre than can be produced in the yellow pine type. One cannot help wondering what foundation there is to the plea of the stockmen that the yellow pine type is needed for summer range.

Krauch has spent practically the entire month on the Santa Fe remeasuring sample plots.

The experiment station is receiving the usual number of appeals from commercial nurseries for aid in securing seed of Arizona cork-bark fir. They insist that the fir growing in the San Francisco Mountains is the only genuine cork bark. One firm is willing to pay as much as $15 a bushel for the cones. At this price, it ought to be possible to interest enough telephone linemen and steeple jacks to supply the demand. Strange to say, squirrel caches are not very abundant this year. It is seldom that a tree bears more than 20 or 30 cones, and these are all at the very tip of the tallest trees.

-------#-------

Status of Manuscripts Received

Pacific Northwest

Natural Reproduction on Cut-over Lands in Douglas Fir Region of Oregon. L. A. Isaac (File report)

Timber Growing and Logging Practice in the Douglas Fir Region. T. T. Munger. Dept. Bul. (Revised)

Rocky Mountain

Plan for Investigations by Forest Officers of the Cochetopa National Forest. C. G. Bates. (File Report)

Lake States

A Handbook for Forest Planting in the Lake States. J. Kittredge, Jr. (Returned to Station with Comments of Board of Review)

Appalachian

Establishment of Western Yellow Pine Forests on the Brushlands of the Inter-mountain Region. C. F. Korstian and F. S. Baker (Returned to Station with comments of Board of Review)

Natural Replacement of Blight-killed Chestnut in the Hardwood Forests of the Northeast. C. F. Korstian and P. W. Stickel. (Returned by Jour. Agric. Res. - For Dept. Cir.)

How to Keep the Farm Woodlot Growing. E. H. Frothingham. (For 1926 Yearbook)

Northeastern

Timber Growing and Logging Practice in the Central States. C. R. Tillotson. Dept. Bul. (Revised)

In Print

Demmon, E. L. Fire Damage in Virgin Southern Pine. (Southern Lumberman, Sept. 11, 1926)

Dana, S. T. Forest Fires and Recreation. (Am. Forests and Forest Life). September, 1926.

Hanzlik, E. J. Trees: A Study for Lumbermen; Sitka spruce. (Four L Lumber News. Sept., 1926)

Zon, Raphael. Handling Hardwood Forest. (Lumber World Review, Aug. 10, 1926)

Wahlenberg, W. G. Western Larch Nursery Practice. (Jour. Agric. Res. August, 1926)

Munger, T. T. "Biographing" Fir Seedlings. (Timberman, September, 1926.)

Munger, T. T. Possible vs. Actual Yields. (Forest Patrolman, Sept. 1926.)

Simson, A. G. Forest Fire Research and the Recording Milli-ammeter (Esterline-Angus Company House Organ)

------#------

A new chart "Nearest Comparable Grades of Yard Lumber Products Cut from Various Species of Softwoods" was completed and made available to a number of Federal agencies and lumber associations. The chart, which was prepared mainly for Federal purchases, enables one to compare in a general way the grades of various softwoods. For instance, a buyer of No. 1 common Douglas fir wishing to substitute northern white pine would find it necessary to purchase No. 1 barn in order to obtain lumber of a comparable grade.

The National Advisory Committee for Aeronautics has transferred to the Forest Service the sum of $2,500 for conducting a study of the resistance of glues to prolonged exposure under damp conditions. This is their first transfer of funds for studies of this nature. They realize that wood and glues will be employed in aircraft construction for some time to come, and are seeking facts concerning the problem through research of the Forest Service.

A recent field trip to New England, during which over 60 hardwood plants using mainly beech, birch and maple were visited, brought out a number of interesting facts in relation to the hardwood situation. One of the most striking was the large surplus of stock, mainly in the form of dimension squares, cut from small second growth and from low grade material.

While very large quantities of hardwood dimension stock are consumed by turning plants and furniture factories throughout New England there is ample opportunity for encouraging a larger use of such stock in place of lumber. The most important factor in the manufacture of hardwoods in this region appears to be seasoning, which in this case generally means air seasoning.

The report "Quantity of Wood Treated and Preservatives Used in the United States for 1925" has been issued in cooperation with the American Wood Preservers' Association.

-------#-------

FOREST PRODUCTS - DISTRICT 1

Little Used Species Project

The report on white fir has been completed. This follows the general form of the larch memorandum and brings together all the data now available on white fir in District One. The following tabulation indicates the products made in this region from the white fir:

WHITE FIR WIDTHS BY PRODUCTS - 12 MONTHS' SHIPMENTS - 1 Mill

Products	Per cent of 4"	6"	8"	10"	12"	Random	% of Total
S2S & C M	1	66	24	2		7	6
Ceiling or Partition	7	24	44	25			4
Drop Siding		67	33				1
Rustic		87	13				ϕ
Shiplap	ϕ	4	61	34	ϕ	1	24
Misc. Patterns	72	16		12			1
Square Edge Surfaced	15	7	25	9	8	36	55
Square Edge Rough	39	16	3	3	21	18	9
Total							100

Note: ϕ less than 1%

Lumber Prices	Annual 1925	First Q. 1926	Second Q. 1926	July 1926	August 1926
Idaho white pine	$37.37	$37.10	$38.65	$38.95	$36.59
W. yellow pine	28.02	29.33	28.14	25.03	24.38
Larch-fir	19.33	19.33	18.05	17.81	17.27
White fir	20.14	19.79	19.86	18.98	18.26
Spruce	24.28	23.60	25.68	23.32	23.42

Wood Preservation

The 1926 service test inspections and reports covering the National Bison Range fence near Ravalli; the two Northern Pacific Railway test tracks located near Plains and near Thompson Falls, Montana; the Ammen fence and a telephone line on the Missoula Forest were completed during the month. The following data concerning the present condition of the treated timbers in the Bison Range fence and the Plains test track which are two of the oldest projects on which durability records have been kept in this District may be of general interest.

The Bison Range fence was constructed by the Forest Service in 1909. Nearly all of the posts used were of fire-killed western red cedar from Idaho. These were given a 12 to 15-minute treatment by the dipping method, with a total absorption of from ¼ to ½ gallon of creosote per post. Over 10,000 posts were originally set, but two changes of location made in 1916 and 1917 reduced the number to 9,966. The majority of the posts were of split cedar 9' long and about 7" across the top. About 4% of them were round posts from 6" to 7" in diameter at the top.

At the end of 17 years there are 8,089, or 81.2 per cent of the original posts left in the fence and 1,877 new posts have been set. A total of 992 were replaced on account of decay and 885 because of changes in the fence lines, small size, splitting, etc. Since 380 of the posts originally set were of treated western yellow pine which were removed at the end of 3½ years, only 612 or 6.1 per cent of the original treated cedar posts have been replaced on account of decay.

The inspection of the fence recently completed shows a total of 617 posts which should be replaced this year and 670 which should be replaced later, or a total of 1,287 showing decay. On this basis, 84.1% of the original treated cedar posts left in the fence are still in good condition; 7.6% are decayed, and 8.3% partly decayed.

About 675 new posts will be placed in the fence during the present fiscal year. The replacement costs for the past two years, using 10' treated cedar posts, have averaged about $1.60 per post. Out of this amount it has cost about $1.10 to purchase the new post, treat it and place it on the ground, and 50¢ for the labor included in the actual removal, setting, tamping, and re-stapling the wire.

Project L-50. Test Track Near Plains

There were 390 fir and larch ties treated with a 6% solution and 2,260 untreated ties originally laid in the test track near Plains early in 1907.

All untreated ties consisting of 1,141 green and seasoned western larch and 1,119 green and seasoned Douglas fir were replaced more than ten years ago. Irrespective of track equipment, the average life of the green and seasoned larch proved to be 7.3 and 7.4 years respectively. The average life of the green Douglas fir ties was 7.6 years and that of the seasoned Douglas fir ties 7.7 years. These figures show that the seasoning of untreated timbers before they are placed in service makes practically no difference in their average life.

Thirty-one per cent of the zinc-chloride-treated Douglas fir and forty-two per cent of the larch ties treated by the same method and laid at the same time are still in the track after 19.5 years of service in the main line. Only 35.5% of the treated fir ties and 24.3% of the larch ties had been removed at the end of 15 years.

Some of the ties were originally laid with Sellers tie plates and screw spikes. In two other lots the Sellers plates were used with alternate cut and screw spikes. All ties in the track have been turned over. In 1918 when the rails were relaid with 90-pound per yard, all ties were equipped with regular Northern Pacific standard plates and cut spikes.

Preservation Treatment of Improvement Timbers

Since instructions specifying the use of creosote-petroleum mixtures have been issued in this District which will materially reduce treating costs, the Custer, Missoula, and Lolo Forests have recently planned to do a good deal of treating work.

The plans made on the Custer Forest contemplate the treatment of about 2,000 western yellow pine posts this fall for drift fences and ranger stations improvements.

On the Missoula Forest preparations have been made to treat 400 lodgepole pine stubs for the Rock Creek line and this work will soon be under way.

The Lolo Forest has purchased four substantial treating tanks 4' in diameter and 5½' deep and will also treat some telephone stubs this fall. Two of the tanks will be installed at the Lolo Springs ranger station for use in treating the lodgepole pine re-enforcing stubs required for about 15 miles of pole line. Another tank will be located at Quartz and one in the Superior district, where it is planned to treat both fence posts and stubs. Several Forests are now equipped with treating tanks.

Creosoted cedar fence posts have been used in all improvement work at the National Bison Range since the fence was originally constructed and the warden is now planning to use a creosote-petroleum mixture consisting of 60% gas oil and 40% creosote in the treatment of over 600 posts which should be replaced during the present fiscal year. A good grade of gas oil derived from the Kevin-Sunburst crude can be obtained at Missoula for 7¢ per gallon. The coal-tar creosote now costs about 27¢ per gallon laid down at Missoula.

American Lumber Standards

For the purpose of determining the policy of Douglas fir manufacturers in regard to "standard" thicknesses, also to collect moisture and density samples, Mr. E. M. Davis of the Forest Products Laboratory spent the month in this District. For the most part, either Gibbons or Johnson accompanied Davis on his field trips.

As to finish and pattern stock the industry is producing lumber of standard size and grade. The industry, moreover, is gradually changing over to standard thicknesses in the common grades. One gets the impression from some manufacturers that a complete shift to standard thicknesses in Common rests largely with buyers, that as matters now stand many buyers prefer the 24/32 inch, at a slightly lower price, to the 25/32 inch board. A number of mills are grade marking their uppers, and it is anticipated that the future may see a similar practice obtaining with the Common grades.

General Survey of Woods Waste in the Douglas Fir Region

The field work, so far as the Grays Harbor region is concerned, was finished during the month by Messrs. Hodgson and Koroleff, with the completion of two additional companies. Mr. Gibbons witnessed the progress of the study at one of these camps.

Mr. Hodgson reports that the Clemons Logging Company, though handicapped somewhat by being an independent logger, is taking more than usual interest in closer utilization. The study indicated that this company is cleaning up the yarding sides probably a little better than the average, also that the fallers are cutting relatively low stumps. The land being logged is exceedingly rough and broken, resulting at best in a large amount of breakage. To reduce breakage, as well as losses through poor bucking, to a minimum, the company has built up an organization to check up on the fallers and to mark the logs for bucking. The Long-Bell Lumber Company is also making use of a similar organization.

The utilization found at the camps of the Schafer Bros. Logging Company was found to be only average. However, at one of their camps Mr. Hodgson observed possibly the cleanest logging that has yet been seen in any of the camps so far. The unusual thing is that the foreman of the camp in question has a widespread reputation of being a "high-ball" logger. The daily output in logs here averages close to 2,000 feet per man, about double the average for the region. Timber and logging conditions are quite similar to those found in other centers of the Douglas fir region, and the same is true in regard to logging equipment and methods. This seems to indicate that small waste can be combined with a large log output. As a matter of general interest, this foreman, with a crew of 19 men, established what is probably a record for speed of logging, when in 8 hours he yarded and loaded 104 cars of logs with a gross scale of 800,000 feet.

Proposed Felling and Bucking Study

On completion of the general woods waste survey in the Douglas fir region, an intensive felling and bucking study will be initiated. It is logical that the first intensive study should deal with the initial step in logging, as it is here that the largest amount of wood waste is made. Then, too, the Forest Service in administering timber sales should have an especially good grasp of best felling and bucking practice.

Mr. Koroleff will doubtless continue with the woods utilization studies, while Mr. Hodgson will be assigned to the lumber manufacturing field when the general woods waste survey report is brought to completion.

While working on the general woods waste survey, and as time will permit, Mr. Koroleff is paying particular attention to felling and bucking. Considerable knowledge of this step in the logging operation will be required in the preparation of the working plan. And at times it will be possible to collect worth while data.

Mr. Koroleff reports that the waste resulting from breakage, and largely because of very rough topography, would be excessively high at the Clemons Logging Company if the company did not make a special effort to keep it to a minimum. This is done largely through a strict enforcement of cutting rules, penalizing the workmen when they break good timber, or otherwise waste it, without an adequate excuse or as a result of the haste common to "bushel work." For example, if fallers cut stumps unnecessarily high they are first spoken to, the second time they are not paid for the tree, and the third time they are fired. A bucker who slabs a log as a result of carelessness will be "docked" the log, the next time he is not paid for the tree, and the third time he is careless he "hits the road." Such management results, of course, in a large labor turnover (about four fallers and buckers are discharged each day), but the company's rate for felling and bucking is slightly higher than the average for the region and so it has no shortage of labor.

The company employs 70 fallers and 84 buckers. In addition there is the overhead, consisting of 1 head scaler, 1 head bull bucker, 6 scalers, 3 markers, and 4 bull buckers. The efficiency of markers, wherever they are employed, is often diminished by the fact that they are overburdened or underpaid. At the Clemons Logging Company a marker is employed with four sets of fallers, and under adverse conditions there is one to three sets. A set of fallers average about 40,000 feet per day.) This keeps the marker busy but enables him to contribute greatly in reducing waste.

Publications

Much of Gibbons' time during the month was given over to putting the finishing touches to the report, "The Air Seasoning of Lumber in the Douglas Fir Region," so that publication could start in the October issue of that journal. The tentative draft of the report was submitted to the Washington office, the ForestProducts Laboratory, Districts 1 and 5, also several lumbermen, for review. Acknowledgment is made to Messrs. Thelen, Koehler, DeFon, Betts, Fullaway and Hill for what seemed like a mighty thorough review.

During the month Mr. Hodgson prepared a 2,500-word article, "One Solution for the Woods-Waste Problem," for publication in one of the local trade papers. The article deals with the integration of wood-using industries and points to the Simpson Logging Company of Shelton, Washington, as an example of what can be done in this way.

The West Coast Lumberman (September 1) published Hodgson's article, "Flexible Logging Equipment Aids Utilization." This article draws attention to the operations of the Hama Hama Logging Company on Hoods Canal, Washington, at which several different methods of logging are employed, including the caterpillar tractor method.

Several stories dealing with the general woods waste survey were published in the Grays Harbor Region, as a result of Hodgson's work in that region.

Miscellaneous

From his trip into the Grays Harbor region, Mr. Hodgson brought in this bit of interesting information. A tabulation prepared by a man in the lumber business shows the probable life of 22 large logging operations in the Grays Harbor region, as follows:

13 companies will be cut out in 5 years.
7 " " " " " " 6 to 10 years.
2 " have more than a 10-years' supply of stumpage.

This illustrates how the virgin stands are going in the large producing centers of the Pacific Northwest. Considerably more than a billion feet of lumber is now produced annually in the Grays Harbor region.

The Crown-Willamette Pulp and Paper Company is hauling some spruce logs by rail from the Coos Bay region, or 190 miles. The logs, bucked into 16-foot lengths, are transported in gondola cars. The freight amounts to $5.40 per thousand, gross scale. It is believed that this breaks the record for rail shipments of logs in the Douglas fir region. It also suggests that the supply of spruce is becoming scarce.

Mr. Johnson reports that the Coos Bay Lumber Company at Marshfield, Oregon, has installed two band gang saws. So far as known this is the first installation of this type of gang in the Douglas fir region; similar gangs are used to an extent, it is said, in California. One of the gangs consists of five 6-foot 15-gauge band saws, the other of six saws. The 6-band gang, according to the management, has a capcity of 40,000 feet per hour, when working steadily and under ideal conditions. These gangs are much more flexible than the usual upright type, in that a system of levers enables the operator to quickly adjust the saws to each cant and so saw the cant into the most profitable items.

Dependence of Western Agriculture on Irrigation Water from National Forests

Compilations recently made on the basis of the 1920 Census figures show to what extent western farming is dependent on the run-off from National Forest watersheds.

In the 12 Western States containing National Forests the statistics show the following conditions in regard to farm lands, irrigated and otherwise:

Totals	Number of farms	Acres irrigated	Value of crop	Capital invested in irrigation	Number of irrigation enterprises
1. Of the 12 States	552,940	17,861,735	$1,822,817,232	$623,353,077	58,868
2. Of their irrigated lands	205,240	17,861,735	704,906,264	623,353,077	58,868
3. Of their lands irrigated by N.F. water	185,420	15,824,172	621,360,229	541,713,493	52,147
% relation of (3) to (2)	90.3	88.6	88.1	86.9	88.6

It is true that less than half of the farms in these States are irrigated. It is also true that about 60 per cent of the crop value is obtained from lands not irrigated. This part consists largely of grains, hay, and orchard products. Nevertheless, it can hardly be gainsaid that the backbone of western agriculture is irrigation, and that nearly 90 per cent of all irrigation there depends upon National Forest waters.

Land Utilization in the United States

A preliminary report on land utilization in the United States, based on the 1925 agricultural census, shows several changes in farm crops and forest areas since the last census in 1919. The statistics reveal a decrease of 19 million acres between 1919 (363 million acres) and 1925 (344 million acres) in area of harvested crops. In the same period the acreage of forest land increased about 9 million acres. The difference of 10 million acres is allotted to pasture.

The rate of crop acreage increase was broken in the last 5-year period. The rate of increase during the 1899-1909 period was 10 per cent; between 1909 and 1919 it was 14 per cent; but between 1919 and 1925 occurred the first actual decrease in crop area in the history of the United States. This decrease is laid to post-war agricultural depression, lack of European buying, and somewhat to the decrease in numbers of horses and mules on farms, which released large areas for other purposes than raising horse feed.

The decrease in crop acreages during the past 5 years is regional. Shrinkage of crop areas in the South and eastern corn belt was partially offset by increases in the great plains and in parts of the upper Lake States, New York, and New England. At the same time, in several counties in Michigan, New England, and New York decreases have occurred in both pasture and crop land, indicating that some poorer crop lands have reverted to pasture and some pasture lands have gone back to forest. As a rule, however, the decrease in pasture lands occurred in regions where crop acreages increased, mostly in the Middle West and Montana.

Throughout the South generally, particularly in northeastern Missouri, and in the upper portion of the Lake States considerable forest land was cleared for crop purposes. Some land was also cleared around Puget Sound in Washington and in the Willamette Valley in Oregon.

The most notable decrease in crop acreages occurred in Georgia, amounting to 28 per cent for the State as a whole, between 1919 and 1925. In 1919, 61,000 farms were worked which were not worked in 1924. This was due largely to abandoned farms lying idle on the hands of banks and insurance companies. The relatively higher urban wages reduced the available supply of farm labor, particularly negroes. Furthermore, the yield of cotton in Georgia in 1922 and 1923 was only half as great as in 1917 and 1918 due to the boll weevil. Cotton acreages increased in North Carolina, southeastern Alabama, in the Mississippi bottomlands, and in Texas and Oklahoma. Increases in cotton raising in these territories accounted for decreases in corn acreages.

In the corn and winter wheat belt the decrease in crop acreages was almost universal. The decline is attributed to decreases in wheat areas, a direct result of low prices. Corn acreages were also reduced in many sections. The decrease in corn and wheat acreages in the hay and pasture belt was greater than the increases of other crops. In this region crops in the raising of which little labor is required tended to increase, while crops requiring more labor decreased because of urban competition for labor.

Increases in the southern great plains regions were caused by expansion in winter wheat production, despite low prices and also by larger production of sorghums. The greater crop acreages in the northern great plains regions in 1925 is not indicative because of the hard drought conditions of 1919 which hampered agriculture throughout the region. Increases in the Panhandle of Texas are assignable to the spread of cotton production.

Southwestern Minnesota showed the most notable increase in crop areas in 1925 as compared with 1919, due to increases in oats and corn acreages. This indicates a northward expansion of the corn belt.

In southern New England and locally in New York the increase in number of farms, and in some counties of crop land, also reflects the fact that dairy and poultry products have brought relatively higher prices in the past 5 years than any other major farm product. Massachusetts, Connecticut, Vermont, and New Hampshire are the only states in the nation reporting a greater per capita farm income in 1921 as compared with 1919.

The Newsprint Situation

During the past 5 years the announcement of another newsprint mill has ceased to be a novelty. In Canada, production units have grown both in number and in size. So great has been the increase in production that doubt as to ability of the American market to absorb the increase has been felt on all sides. But the American market has as yet shown no signs of weakening.

From May of this year to the present the monthly production of newsprint in both the United States and Canada has averaged 500,000 tons, about 50,000 more per month than for the same period in 1925, and nearly 75,000 more than for a similar period in 1924. Meanwhile the leading publishers are reporting decreased stocks; the spot market is firm; and contract prices are unchanged. In other words, despite the great production, the saturation point in American newsprint consumption has not been reached.

Stumpage Prices

In connection with the stumpage price study for 1925 several interesting things have come to light. Of great importance is the constantly rising price of virgin longleaf pine. The weighted average in the Lower Mississippi region in 1925 was $12.88 per M with an upper range as high as $17.50 for small blocks of good timber easily accessible. Large areas

requiring a period of years to cut sold for $9 or $10 per M. This difference in price is indicative of the cost of holding high-price timber.

For the first time prices in Oregon reached approximately the same level as Washington prices. This indicates that the supply in Washington is becoming more inaccessible, while the Oregon supply is tending to become more accessible. Incidentally, it indicates that the longer railroad hauls in Oregon, largely chargeable against stumpage, have been provided for in past sales.

Despite severe competitive conditions in the Northeast, prices do not seem to have decreased. The volume of sales, however, has fallen off to a marked extent.

Stumpage prices in the North Carolina pine region show a decided drop in 1925 as compared with 1924, particularly in North Carolina pine. It is said that the North Carolina pine operators would rejoice if a slide would fill the Panama Canal thereby eliminating the Douglas fir competition. But few mills can compete with Douglas fir and make a normal profit. North Carolina pine lumber sales are largely confined to the Atlantic Coast cities and are, therefore, in competition with Douglas fir at the point where Douglas fir can be sold the cheapest in the East.

Throughout the study of stumpage prices it has been impossible to obtain records of representative sales of cypress in the South, and redwood, sugar pine, and western yellow pine in California. In all cases the representative stands are strongly held and are not on the market. Most of the transfers reported are worthless as a matter of price record because of the condition of sale.

-------#-------

GRAZING RESEARCH

Washington Office Notes

Mr. Chapline, who visited on the Tonto National Forest during the first part of September, wrote that the unusually dry forest conditions in the Pacific Northwest would likely be reflected in a shortage of feed on many ranges this fall, probably resulting in light-weight lambs being sent to market, early grazing of fall pastures, and some shortage of winter feed. Mr. Chapline reported that the ranges of western Montana and northern Idaho had also been rather short this year, but in central and eastern Montana forage conditions were about normal.

Under date of September 10, Prof. A. S. Hitchcock, Senior Botanist in charge of Systematic Agrostology, Bureau of Plant Industry, addressed the following letter to Mr. Chapline:

> "Last June you were good enough to arrange for certain cooperative trips to the National Forests in Wyoming, Colorado, Utah, and New Mexico. I made these trips in accord with our understanding. I am writing now to say that I received the most cordial cooperation from the supervisors and other officers with whom I came in contact. I appreciate greatly the aid that these gentlemen gave me. In each case some one, either a supervisor or other officer, was with me during my trips in the forest. Some of my trips were made horseback and some by auto. I was able to do much more work than I could have done alone. I wish you would transmit to the officers concerned my appreciation of their hearty cooperation."

Prof. Hitchcock's collection had largely to do with the manual of American grasses which he is now preparing.

Personnel

The Civil Service Commission announced an examination for Junior Plant Ecologist, to be held October 9. This examination is being held primarily to fill the vacancy to be caused by Mrs. Motley's prospective resignation.

Plant Identification Routine

During the month of September, 26 plant collections, representing 684 specimens, were transmitted to the Bureau of Plant Industry for formal determination. Three hundred and forty-eight plant specimens were mounted and filed in the herbarium during the month.

-------#-------

SANTA RITA

Visitors

Messrs. Clapp, Pooler, Marsh, Chapline and Pearson spent September eighteenth to twentieth going over field and office work on the Santa Rita. Work accomplished during the present season was discussed in the field and proposed plans, for the coming year, were discussed at length.

On September 25th, Drs. Clements, Vorhies and Taylor, together with Mr. Cooperrider, spent the day at the Reserve going over projects in the field and discussing plans for future cooperation with the Forest Service in the investigations being conducted and particularly with reference to range damage by various kinds of rodents.

Natural Revegetation

Growth has been slow and spotted over the larger part of the Reserve and, with the exception of the South and extreme North portions, is considerably below normal. However, it has managed to stay green up to the recent heavy rains and a considerable amount of growth will undoubtedly come on within the next few weeks. Ordinarily most of the vegetation begins to dry up about the middle of September and little, if any, growth occurs after that time. A late start and continued light showers, during the present season, have been responsible for growth continuing as late as it has. During September 5.95 inches of rainfall were recorded at Florida Station, the larger part of it coming during the closing days of the month when approximately three inches of rain fell in four days' time. This rainfall is 2.5 inches above the previous highest September rainfall over the past twenty-five year period and is 4.58 inches above the September average for the same period of time. Aside from the additional growth that will occur as a result of these recent rains the greatest benefit will be from the replenishment of the water supply which has been at a lower level than for many years past.

A number of quadrats, charted during the past week, indicates an appreciable increase in density of the important forage grasses over last year and the results serve to substantiate the general ocular observations that have been made over the entire Reserve. Exceptionally favorable spring growing conditions have been held as chiefly responsible for this condition.

---#---

GREAT BASIN

Station Activities

July and August are such busy months at the Great Basin Station that we overlooked submitting our notes for July. This item was omitted from the Job Sheet and this accounts in part for our delinquency. At that we wouldn't be without our Job Sheet. It has well proven its worth in the Station work. With some twenty projects to cover, only a small force of men (six in addition to Forest trainees) and a very short field season, it is necessary to make very careful use of time. This requires premeditation and a careful line-up of each job to be done.

Miscellaneous Matters

Under-average precipitation during the summer has had its effect on the Station work. The precipitation for the three-month period, June-August, has varied from sixteen to fifty per cent below average at the various climatological stations. Forage growth has been below average and in many places dried up before quadrats could be mapped. The remapping of some 20 quadrats listed for handling this year has been postponed a year. Some 40 others remapped only every second or third year, although recorded this year, will have to be remapped in 1927.

Forsling spent the last week in July remapping quadrats on the spring-fall range at the U. S. Sheep Experiment Station near Dubois, Idaho, where he was assisted by Asst. Supervisor Arrivee and Ranger Pickett of the Targhee Forest and Ranger Miller of the Lemhi Forest. The vegetation was so dry it was almost impossible to distinguish the species and they will have to be rechecked again in 1927.

Range Management Meeting

A conference of Forest Supervisors to consider range management matters was held at the Station during the period of July 6 to 10 inclusive. There were in attendance at this meeting, in addition to 16 Forest Supervisors from the Utah, Nevada, Arizona and southern Idaho Forests of District 4, the District Forester, Assistant District Foresters in charge of Grazing, Forest Management, Lands, and Public Relations, Inspector of Grazing, and the chief of the range reconnaissance party from D-4, the Assistant District Foresters in Charge of Grazing from Districts 2 and 5, and C. E. Rachford of the Washington office. Trips were made into the field for actual demonstrations during the day with an assembly for discussions each evening. The meeting dealt almost exclusively with range management matters such as range management plans, carrying capacity, utilization, range readiness, handling stock on the range, reconnaissance and administrative range plots and quadrats and the results of the work of the Experiment Station. Discussion of the grazing regulations and such things as distribution of grazing privileges, which used to dominate meetings in days gone by, was conspicuous by its absence.

This meeting was of special interest to the Station because of the opportunity it afforded to set the visitors to thinking of the problems which the Station is attacking, as well as to convey the results of the experimental work to the administrative officers and to exchange ideas with them on the practicability of application of the results in range management. Not the least value of an experiment station is to set the man who is practicing range management to thinking of the various problems confronted and to figuring how they may be met. An inspection of the work of the Station should go a long way in arousing this interest. Sufficient time was taken to go into the object of each one of the projects and to inspect some of the work in each on the ground as well as to review the results to date. It is considered that more was gained by the field inspection and discussion than could be accomplished by half a dozen reports or bulletins. Moreover, it is believed that where reports are published they will be of more interest and be more fully understood by the reader if he has become familiar with the conditions under which the results were obtained.

Study of Sap Properties of Range Plants

Dr. J. Arthur Harris, Head of the Department of Botany at the University of Minnesota, who is cooperating with the Forest Service at the Great Basin Station in the study of the sap properties of range plants, spent a few days at the Station in July going over the work and in starting his assistant, Mr. John W. Moore, to make plant collections. This is the third season of this work with Dr. Harris. Determination of osmotic pressure, electrical conductivity, principal salts, and other properties of the cell sap of important range plants and for some of the soil types in the vicinity of the Station are being made for use in the study of plant succession, natural revegetation and artificial reseeding. Laboratory facilities for making the determinations were maintained at the Station in 1925, but in 1924 and 1926 the collections were forwarded to Nephi, Utah, where Dr. Harris operated a more fully equipped laboratory in connection with the study of dry land crops. It is expected that a preliminary report on the three years' work will be prepared this fall.

Temporary Assignment of Men to the Station for Training

Last spring a letter was issued from the Washington office to each of the Districts suggesting the temporary assignment of grazing or other qualified men to the Great Basin Station for the purpose of giving them the benefit of such training as might be derived from assisting in experimental work, for the period of approximately a month. District 4 was the only one to respond this year, and although not being able to arrange their work to assign grazing men, did send one Supervisor, one Assistant Supervisor, and one Ranger for the period of four weeks each. These assignments were sufficient to try out the value of the system.

In so far as the Station is concerned the scheme is very much of a success, and it is believed the men all considered it very much worth while. Although some time was lost in getting the men acquainted with the work this was more than offset by added accomplishments during the season as the result of the efforts by these men. There are many jobs that such men can do fully as well as men who have had longer experience in investigative work and especially on jobs requiring two men. In such instances one of the regular Station men and one of the trainees was assigned to the task with very little loss of time, no lowering of standard of work and at the same time giving the trainee full opportunity for learning the methods and purpose of the work.

The value to the Station of such assignments are: (1) more assistance and greater accomplishments during the season; (2) dissemination of results of the Station work; and (3) in the case of experienced administrative men, the benefit of the administrative man's point of view. Among the various things to be gained by the trainee are (1) the opportunity to become thoroughly acquainted with the purpose of the work, problems being studied and results to date of the Station work; (2) familiarity with conditions under which problems are being worked out and hence a better understanding of subsequent reports on results of the station work and their application, and (3) training in experimental methods which will be of value in administrative range studies. The Station will be in a position to use a number of such men each year and hopes that the system will be continued.

Visitors at the Station

Among the visitors at the Station during July and August, other than those in attendance at the Supervisors' meeting, were Prof. E. L. Potter of the Oregon Agricultural College in July, R. R. Hill of the Washington office of Grazing in August, and Messrs. Clapp, Marsh and Chapline the last of August and the first few days of September. This was our first inspection by members of the Branch of Research since we came into that family. We hope there will be many more like it. Although they were able to stay but three and one-half days a lot of very good discussion regarding present and future work of the Station was crammed into the short period, only a few hours out of every 24 being taken out for sleep.

-------#-------

JORNADA

Range Conditions & Precipitation

General rains which occurred the first week in September have maintained the forage in excellent condition throughout the month. The precipitation so far this growing season has amounted to approximately 6.00 inches, which is 1.30 inches above the mean seasonal for the months of July, August and September. The growing season this year is about over apparently since the important perennial grasses have for the most part reached maturity. As compared with more average years with a growing season of approximately 3 months, the growing season this year has been of 5 months duration, having begun in May instead of July, as is usually the case. As a result of this long season, the forage is unusually good on all types and plenty of winter and spring grass is assured. According to the records this season has been the most favorable for growth since 1915.

Range Improvements

Work on rebuilding and extending the mountain pasture fence is about half completed. This pasture is to be deferred for the next year or two and subsequently it will be lightly used and held as a reserve during drought periods.

Investigative Work

Fall quadrating this year was begun September 1st. To date approximately 60% of the quadrats have been charted, all but 2 having been done by means of the Hill pantograph, which has proven to be a big time saver in this work. Of the quadrats charted, there are few if any which do not show considerable improvement over last year. This is especially true of the grama, aristida, tobosa and mixed grass series. Likewise the range in the vicinity of these quadrats has shown a similar improvement over last year. The black grama quadrats show an unusually large number of new firm sets well established, which will result in a considerable increase in density on these types over the entire range.

New Quadrats

Two new series of quadrats were established this month on typical tobosa and mixed grass types. These new series will add materially to the data available for the natural revegetation project and in addition will give valuable data on the condition of the range surrounding these quadrats.

Visitors

Messrs. Clapp, Pooler, Marsh and Chapline were visitors at the Jornada inspecting projects and going over the range. About noon September 22, Mr. Chapline received an injury to his right eye caused by a broken soapweed stalk striking him in the face while riding in an automobile with other members of the party. Mr. Chapline was driven to El Paso for medical attention the same afternoon and after examination it was found that the injury had not affected the sight or the eyeball, the eyelid only having been lacerated. Needless to say we are glad to report that the accident did not prove to be more serious and it is hoped that he will recover from his injury very soon. Messrs. Clapp, Pooler and Marsh also proceeded to El Paso the same afternoon, where on the following day the projects, plans for the future and general administrative problems connected with the Jornada were discussed.

------#------

EDITOR

Considering how field work must be done and bulletins must be written, it is seldom practicable for authors to attempt to illustrate their text with photographs taken specifically for that purpose. It may be that some day we shall be able to take photographs in the course of a particular study which will at the same time catch the important points brought out in the subsequent bulletin and prove to be satisfactory illustrative material for reproduction as half tones. We are not yet at that point, and the best thing to do is to make the illustrations that we can obtain as effective as possible.

Recent publications of the Experiment Stations, and others soon forthcoming, are examples of one way of making effective use of photographs that illustrate the subject discussed but do not tie up very definitely with the actual field work. The method is to select photographs which illustrate specific points brought out by the study leading up definitely to the author's general conclusions. These photographs are given titles that serve to emphasize this purpose, and frequently there are no text references to the photographs, although they may be so placed as to illustrate the immediate text in a general way. The result is that the photographs and their titles, taken consecutively, give the reader a brief but rather complete sketch of the whole study in such a way that they might almost be published separately and yet achieve an entity in themselves.

It will be obvious that the best results are obtained when the author selects his own photographs and writes his own titles. Such photographs should not be chosen with respect to the actual location of the area shown, or the kind of forest growth or surface growth included in the view, but rather with respect to what will strike the casual reader as significant in the photograph. No matter what the title may say about the picture, if some irrelevant detail is bound to catch the reader's eye the illustration will fail in effectiveness. A bulletin was recently submitted containing a photograph intended to illustrate the processes of manufacture of a certain product. The pieces of wood that served as illustrations were certainly included in the photograph, but the photograph was useless because the most prominent feature of it was the workman holding up the stakes. Another manuscript recently submitted showed a view of a planting crew. The men were in characteristic attitude, but the fact that they were all very patently posing, instead of working, made the photograph valueless for use in the bulletin, except possibly as comic relief.

One thought is very clear to the editor, although it may not be so to the rest of us, and that is that no photograph at all is better than one which either distracts the reader's attention or fails to convey to him graphically what the author claims for it in the title of the picture.